DESCRIPTION

SEARCH SUPPORT DEVICE AND METHOD, AND RECORDING
MEDIUM STORING PROGRAM FOR COMPUTER TO CARRY OUT
OPERATION WITH SAID SEARCH SUPPORT DEVICE

TECHNICAL FIELD

The present invention relates to a search support device and method, and, more particularly, to a search support device and method by which URL addresses are classified into different categories. The present invention also relates to a recording medium that stores a program for a computer to perform an operation with the search support device.

BACKGROUND ART

Today, the Internet has widely spread as a computer network used across the world. There are no governments or organizations that manage the Internet, but a large number of groups operate and support the Internet in terms of technology and resource. The services and information that are available on the Internet are developing day by day with the evolution of technology, and it is never easy to quickly obtain desired information from the Internet.

In order to obtain desired information from the huge amount of information on the Internet, search engines have been developed. A search engine is a system specially developed for search. There are three types of search engines: a first one is a keyword-inputting type; a second one is a categorized type; and a third one is a keyword-inputting and categorized type.

A user of the Internet normally acquires information from hypertext documents written in the HTML (HyperText Markup Language) accumulated in the

WWW (World Wide Web) server. Each of the hypertext documents is called a "homepage". A user can access a homepage by software developed for accessing files in the HTML. This software is called "browser".

5   When a user searches for information, the URL (Uniform Resource Locators) that indicates the location of the homepage containing the desired information on the Internet is searched for by the search engine, and the user accesses the homepage at

10   the obtained address with the browser.

If the user comes to like the homepage accessed through the search,, the user can register the URL address of the homepage, using one of the functions of the browser. The name of this function

15   might vary depending on which browser is used, but will be hereinafter referred to as "bookmark" in this specification.

A URL address is normally made up of a plurality of character strings, and needs to be

20   inputted every time an access is made to a homepage. However, while a homepage is being accessed, the bookmark is registered, so that the homepage can be promptly accessed by simply selecting the URL address from a list of registered bookmarks next

25   time the user makes an access to the homepage.

Referring now to FIGS. 1 to 3B, the processes for searching for a homepage supposedly containing desired information with a search engine and registering the bookmark for the homepage will

30   be described. FIG. 1 is a flowchart of a series of processes for homepage search and bookmark registration. FIGS. 2A to 3B show examples of browser screens displayed on a display unit.

When the search engine is activated, a

35   keyword input stand-by screen is displayed as shown in FIG. 2A in step S10. If the user wish to search for a homepage on weather forecast, for instance,

the user inputs the words "weather forecast" as a
search keyword in step S11, and the search process
is then carried out in step S12. As a result of the
search process, a plurality of titles of homepages

5 starting from "weather across the country" is
displayed as shown in FIG. 2B.

The user then determines whether or not it
is necessary to limit the desired information to a
more specific keyword in step S13. If it is

10 determined that the desired information should be
more limited ("YES" in step S13), the user again
inputs the more specific keyword in step S14, and
the search process is carried out in step S12.

For instance, if the user wish to acquire

15 some information on the weather in the Kanto region,
instead of the weather across the country, the user
inputs the words "Kanto region" as a keyword, as
shown in FIG. 2C in step S14, and the search process
is again carried out in step S12. As a result of

20 the search process, a plurality of homepages
starting from a homepage entitled "Weather Report in
the Kanto Region" are displayed as shown in FIG. 2C.

The user again determines whether or not
the keyword for the necessary information should be

25 further limited in step S13. If there is no need to
limit the keyword ("NO" in step S13), a homepage the
user wish to access is selected from the list of
homepages and then accessed as shown in FIG. 2D in
step S17.

30 It is then determined whether or not a
bookmark registration should be carried out for the
accessed homepage in step S15. If it is determined
that the bookmark registration should be carried out
for the accessed homepage ("YES" in step S15), the

35 bookmark registration is carried out as shown in FIG.
3A in step S16. For instance, the item "bookmark"
shown in FIG. 2D is selected to register the URL of

the currently accessed homepage along with its title.

With the bookmark registration, the homepage entitled "Weather Report in the Kanto Region" is promptly accessed and displayed, as shown in FIG. 3B, by simply selecting the title from the list of registered bookmarks shown in FIG. 3A. If it is determined that the bookmark registration is not necessary for the accessed homepage ("NO" in step S15), the bookmark registration is not carried out for the accessed homepage.

As described above, the bookmark registration is carried out for a homepage to be frequently accessed, so that an access can be easily made to the homepage.

However, the information including the URL address of each registered homepage (hereinafter referred to as "homepage information") is registered as the list of registered bookmarks as shown in FIG. 3A. As the number of registered bookmarks increases, it becomes more difficult to select a desired homepage. Also, homepages having similar information might be mistaken for each other.

In such a case, the user may categorize the registered bookmark information. However, such a process complicates the overall operation.

Meanwhile, the categories used with the search engine are predetermined by the homepage of search engine. As a result, the search cannot be carried out using categories that are easy for the user to recognize.

Furthermore, the user needs to use predetermined characters for each keyword, otherwise the homepage containing desired information cannot be searched for.

If the user does not use the predetermined characters for a search keyword, the user repeatedly inputs a search keyword and repeats the search

process, which results in a longer line using time and a higher line charge.

DISCLOSURE THE INVENTION

5   The present invention aims to solve the above problems, and a first object of the present invention is to provide a search support device and method by which a user can register homepage information classified into various categories

10   through a simple operation.

A second object of the present invention is to provide a search support device and method that can construct a category menu in which information is classified into categories easy for users to understand, generate a search character

15   string used for a search process by a search engine based on the selection of the category menu, and restrict an increase in line charge by shortening the usage time of the telephone line.

20   A third object of the present invention is to provide a recording medium that stores a program for a computer to perform an operation with the above search support device.

To achieve the first object, the present

25   invention provides a search support device which registers an address indicating the location of information that can be accessed on a network. This search support device includes: a search unit that determines the category of an address designated for

30   registration based on a registered address; and a registration unit that registers an address under the determined category.

With this search support device, a user uses a search engine to search for a homepage

35   containing desired information among homepages written in the HTML format accumulated on the WWW sever on the Internet. Here, the user inputs search

information associated with the desired information into the search engine, thereby detecting the homepage containing the search information.

The user then actually accesses the detected homepage with the browser, and checks the contents. If there is a homepage the user comes to like, the information such as the address and title of the homepage can be registered in a bookmark registration process. In this case, the search support device of the present invention classifies the information such as the address and title of the homepage requested for the bookmark registration.

The search information inputted into the search engine is formed by a search character string that is considered to be related to the desired information. Accordingly, by analyzing and registering the information such as the address of the homepage based on the search information, all the information can be classified into categories that the user can easily recognize.

When located on the same level as an address designated for registration, the address should be registered under the category in which an address has already been registered. In view of this, the registration unit of the search support device of the present invention may register an address designated for registration under the category in which an address has already been registered.

With this search support device, an address designated for registration can be additionally registered in the category of a registered address.

Further, to achieve the first object, the present invention provides a search support method in which an address indicating the location of information accessible on a network. This method

includes the steps of: determining a category of an address designated for registration based on an address that has already been registered; and registering an address in the determined category.

5   To achieve the second object, the present invention provides a search support device in which a search process for an address indicating the location of desired information on a network is requested based on search information associated

10 with the desired information. This search support device includes: a category menu storage unit that stores a category menu in which predetermined categories are listed up; and a search information generation unit that generates search information

15 associated with a category selected from the category menu.

        With such a search support device, a category menu in which information is classified into categories is formed in a client computer,

20 without the use of the categories prepared in a homepage containing a search engine. The category menu prepared in the client computer may be produced by a user, or produced based on data supplied from a server computer.

25   The category menu prepared in the client computer contains search information related to each category. Accordingly, a user selects a category containing desired information from the category menu prepared in the client computer, thereby

30 automatically producing search information to be inputted into the search engine. In this manner, when a user searches for a homepage containing desired information, a suitable search character string is automatically inputted. Thus, the line

35 using time can be shortened, and the telephone charge can be restricted.

        The information such as the location and

title of a homepage that has been registered through
a bookmark registration process can be registered in
association with the category menu prepared in the
client computer. In view of this, the search

5   support device of the present invention may further
include an address registration unit that registers
an address indicating the location of the desired
information searched for based on the search
information generated by the search information

10 generation unit in the category menu, if the
information at the address is accessible.

With this search support device, the
information such as the location and title of a
homepage searched for is classified in accordance

15 with information that can be accessed at the address,
and registered as a part of the category menu
prepared in the client computer. As a result, even
if the amount of homepage information to be
registered becomes voluminous, the information of a

20 desired homepage can be easily selected by carrying
out a search process in accordance with the category
menu.

Also, the information of a homepage
registered as a part of the category menu prepared

25 in the client computer is selected so as to make an
access to the homepage. In view of this, the search
support device of the present invention may include
an address selection unit that accesses the location
of desired information by selecting an address

30 registered in the category menu.

In such a search support device, the
information of a desired homepage can be easily
selected in accordance with the category menu. From
the information of the selected homepage, the search

35 support device acquires the address of the homepage,
and makes an easy access to the homepage with the
browser.

If homepage information is registered as a part of the category menu, the category in which the homepage information is registered can be made visually recognizable. In view of this, the search support device of the present invention may further include an icon conversion unit that visually changes the category in which the address is registered by the address registration unit.

In such a search support device, if there is homepage information to be added as a part of the category menu, the icon of the category that contains the information of the added homepage can be visually changed when the category menu is displayed on the display unit. As a result, the category containing the additionally registered homepage information can be visually recognized.

Further, to achieve the second object, the present invention provides a search support method in which a search process for an address indicating the location of desired information on a network is requested based on search information associated with the desired information. This search support method includes the steps of: storing a category menu in which predetermined categories are listed up; and generating search information related to a category selected from the category menu.

To achieve the third object, the present invention also provides a recording medium that stores a program for a computer to perform an operation with a search support device in which an address indicating the location of information accessible on a network is registered. The program stored in the recording medium includes: a procedure for classifying the address in accordance with a category associated with the accessible information; and a procedure for registering the address classified in accordance with the category.

The present invention also provides a recording medium that stores a program for a computer to perform an operation with a search support device in which a search process for an

5 address indicating the location of desired information on a desired network is requested based on search information associated with the desired information. The program stored in the recording medium includes: a procedure for storing a category

10 menu in which predetermined categories are listed· up; and a procedure for generating search information associated with a category selected from the category menu.

The above recording medium of the present

15 invention may store a program that further includes a procedure for generating the category menu.

Various types of recording media can be employed as the recording medium of the present invention. Examples of such recording media include

20 magnetic recording media that magnetically record information, such as a CD-ROM, a floppy disk, and a magneto-optical (MO) disk, and semiconductor memories that electrically record information, such as a ROM and a flash memory.

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BRIEF DESCRIPTION OF THE DRAWINGS

The features and advantages of the present invention will become more apparent from the following detailed description, with reference to

30 the accompanying drawings.

FIG. 1 is a flowchart of a series of processes for searching for a homepage and registering a bookmark;

FIG. 2 shows examples of browser screens

35 displayed on a display unit;

FIG. 3 shows examples of browser screens displayed on a display unit;

FIG. 4 shows the structure of the hardware of a computer that embodies a search support device in accordance with the present invention;

FIG. 5 is a flowchart of a first embodiment of procedures of a computer that embody a registration process performed by the search support device in accordance with the present invention;

FIG. 6 shows the structure of an example definition entry;

FIG. 7 shows the structure of an example menu;

FIG. 8 shows browser screens displayed on a display unit;

FIG. 9 illustrates a method for generating a command to be actually inputted into the search engine from a search character string;

FIG. 10 is a flowchart of procedures performed by a computer that embody a selection process performed by the search support device in accordance with the present invention;

FIG. 11 shows browser screens displayed on the display unit;

FIG. 12 is a flowchart of procedures performed by a computer that embody a delete process performed by the search support device in accordance with the present invention;

FIG. 13 is a flowchart of a second embodiment of procedures performed by a computer that embody a registration process performed by the search support device in accordance with the present invention;

FIG. 14 shows browser screens displayed on the display unit;

FIG. 15 illustrates the production of a definition entry and a control table from a selection record;

FIG. 16 is a flowchart of the production

of the definition entry and the control table from a selection record; and

FIG. 17 is a flowchart of a third embodiment of procedures performed by a computer

5 that embody a registration process performed by the search support device in accordance with the present invention.

PREFERRED EMBODIMENTS FOR CARRYING OUT THE INVENTION

10 The following is a description of embodiments of the present invention, with reference to the accompanying drawings.

FIG. 4 shows the structure of the hardware of a computer that embodies a search support device

15 in accordance with the present invention.

In FIG. 4, a computer 1 comprises an input unit 2, a display unit 3, a drive unit 4, a recording medium 5, an auxiliary recording unit 6, a memory unit 7, an arithmetic operation unit 8, a

20 communication buffer unit 9, and a communication process unit 10, all of which are connected to each other via a bus B.

The input unit 2 is constituted by a keyboard and a mouse handled by a user of the

25 computer 1, and used to input operation signals into the computer 1. The display unit 3 displays various windows and data for operating the computer 1.

The communication buffer unit 9 temporarily stores data files for exchanging data

30 with an external network via the communication process unit 10. The communication process unit 10 exchanges data with an external network through a communication means such as a telephone line, and transmits the data file from the communication

35 buffer unit 9. The communication process unit 10 receives and stores data files into the communication buffer unit 9.

A program for the search support device is supplied by the recording medium 5 such as a CD-ROM. The recording medium 5 storing the program for the search support device is set to the drive unit 4,

5   and the program is installed from the recording medium 5 into the auxiliary recording unit 6 via the drive unit 4.

The auxiliary recording unit 6 stores necessary files and data, as well as the installed

10   program for the search support device. The memory unit 7 reads out and stores the program for the search support device from the auxiliary recording unit 6 When the computer 1 is activated or the search support device is used. The arithmetic

15   operation unit 8 performs an operation for the search support device, in accordance with the program for the search support device stored in the memory unit 7.

In accordance with the program for the

20   search support device, the memory unit 7 reads out the program for the search support device installed in the auxiliary recording unit 6, and the arithmetic operation unit 8 carries out the procedures described later.

25   FIG. 5 is a flowchart of a first embodiment of the procedures performed by the computer that embody the registration operation performed by the search support device in accordance with the present invention. The registration

30   operation performed by the search support device is a process for registering homepages which the user likes in a menu in which information is classified into categories.

In FIG. 5, a command is inputted through

35   the input unit 2 to activate the browser for accessing a homepage in step S20. The search support device of the present invention may be

automatically started with the activation of the browser, or the user may input an activating command through the input unit 2.

As the browser and the search support
5   device are activated, the arithmetic operation unit 8 reads out a definition entry 18 from the auxiliary recording unit 6 and writes the definition entry 18 in the memory unit 17. Based on the definition entry 18, the menu to be displayed on the display
10   unit 3 is produced in step S21.

Referring now to FIGS. 6 and 7, the definition entry and the menu will be described. FIG. 6 shows the structure of an example of the definition entry, and FIG. 7 shows the structure of
15   an example of the menu. The definition entry include top menu definition entry, sub menu items, additional menu items, registered definition entry, and search definition entry, as shown in FIG. 6. The definition entry define necessary information
20   for producing a menu represented by a hierarchical structure having registered items classified into categories, as shown in FIG. 7.

For instance, the top menu definition entry includes a menu display item (title) 20, the
25   presence or absence of a sub menu/the menu number of the sub menu 21, the presence or absence of a registered item/the menu number of the registered item 22, an additional selection flag/an additional menu cord 23, and a search keyword character string
30   and search conditions 24.

The menu display item 20 defines a greater title to be displayed on the menu shown in FIG. 7. For instance, the menu display item 20 defines the names of greater items, such as "living" and
35   "entertainment and hobby" shown in FIG. 7. The presence or absence of a sub menu/the menu number of the sub menu 21 defines whether or not a sub menu

definition entry exists on the level under each
greater item.   The presence or absence of a
registered item/the menu number of the registered
item 22 defines whether or not a registered item
5   exits on the level under each corresponding greater
item.   The additional selection flag/additional menu
code 23 defines whether or not an additional menu
definition entry is defined on the level under each
corresponding greater item.   The search keyword
10   character string and search conditions 24 define a
search keyword character string used when the
greater item is selected.
        The sub menu definition entry is
substantially the same as the top menu definition
15   entry, and the explanations for those are omitted.
Among the sub menu definition entry, a display item
25 defines the names of middle items such as "read
newspaper article" and "see weather forecast" in the
menu shown in FIG. 7.
20   The additional menu definition entry
includes a menu display item 26 and a search keyword
character string and search conditions 27.   The menu
display item 26 of the additional menu definition
entry defines an additional menu definition entry
25   under a greater item defined by the top menu
definition entry and a medium item defined by the
sub menu definition entry.
        For instance, an additional menu is used
for further classifying the greater item and medium
30   item, and defines smaller items such as "Kanto
region" and "Chubu region" on the level under the
"see weather forecast" in the menu shown in FIG. 7.
        Next, a definition entry of a registered
item is defined when the information of a homepage
35   searched for by a search engine through a process.
The definition entry of the registered item defines
a page title 28, a URL address 29, and an

introduction 30 for the page.

The search definition entry defines the layout definition informant of a menu screen of a search result 30-1, search result data layout definition information 30-2, and search engine start command format definition information 30-3.

An example of the menu produced based on the definition entry 18 described above is shown in FIG. 7. This menu shown in FIG. 7 may take various forms that are easy to use.

Referring back to FIG. 5, which is the flowchart of the first embodiment of the procedures performed by the computer that embodies the registration operation performed by the search support device, the memory unit 7 produces a control table in step (S21). The display unit 3 displays the control table as a menu shown in FIG. 8A in step S22.

The arithmetic operation unit 8 determines whether or not a command for designating an item constituting the menu has been inputted through the input unit 2 in step S23. If it is determined that a command for designating an item constituting the menu ("YES" in step S23), the search character string and the search conditions of the designated item are read out from the definition entry 18, and recorded as a search character string in the memory unit 7 in step S24. The menu display items 20 and 25 designated in step (S23) are recorded as selected items in the memory unit 7 in step S25.

Next, it is determined that whether or not a sub menu is defined under the selected item in step S44. If a sub menu is defined the operation moves on to step S22, and the sub menu shown in FIG. 8B is displayed.

If there is no sub menu definition, the arithmetic operation unit 8 determines whether or

not the additional selection flag 23 of the item
designated in step S23 is defined as "ON" in step
S26. If the additional selection flag 23 of the
item designated in step S23 is defined as "ON"

5 ("YES" in step S26), the arithmetic operation unit 8
displays an additional menu shown in FIG. 8C on the
display unit 3 in step S27.

The arithmetic operation unit 8 then
determines whether or not a command for designating

10 an item that constitutes the additional menu has
been inputted in step S28. If it is determined that
the command for designating an item that constitutes
the additional menu ("YES" in step S28), the search
character string and the search conditions 27 of the

15 designated item are read out from the definition
entry 18, and recorded as a search character string
in the memory unit 7 in step S29. Also, the menu
display item 26 designated in step S28 is recorded
as a selected item in the memory unit 7 in step S30.

20 Next, the search character strings stored
in the memory unit 7 in steps S24 and S29 are
jointed to generate a search character string to be
inputted in the search engine in step S31.
Referring now to FIG. 9, a method of generating a

25 command to be inputted in the search engine from a
search character string will be described.

A search character string 32 recorded in
the memory unit 7 in step S24 and the selected item
recorded in the memory unit 7 in step S25 are

30 recorded as a search character string A. A search
character string 33 recorded in the memory unit 7 in
step S29 and the selected item recorded in the
memory unit 7 in step S30 are recorded as a search
character string B.

35 In the example shown in FIG. 9, the
selected item "see weather forecast" as the title of
the search character string A and the search

character string 32 "weather forecast (and)" are
recorded in the memory unit 7. At this point, the
search character strings are accompanied by the
search conditions. In the case of the search
5   character string A, the search condition is "and".
Likewise, a selected item "Kanto" and a search
character string 33 "Kanto|Kanto region" are
recorded as the title of the search character string
B in the memory unit 7.
10   The search character string 32 "weather
forecast (and)" and the search character string 33
"Kanto|Kanto region" are constructed as one search
character string 34 "weather forecast & Kanto|Kanto
region", and recorded in the memory unit 7. After
15   that, a search engine start command format definer
35 "http://search.or.jp/Title? = @DATA" is read out.
The search string 34 is substituted in "@DATA", so
that an actual transmission command 36
"http://search.or.jp/Title? = weather forecast &
20   Kanto|Kanto region" is constructed.
          Next, the transmission command constructed
in step S31 is transmitted to the browser. By doing
so, the search character 34 is inputted in the
search engine via the communication buffer unit 9
25   and the communication process unit 10, and the
search process is carried out by the search engine
in step S32. In other words, the telephone line
usage starts at this point.
          A result of the search process by the
30   search engine is supplied to the memory unit 7 via
the commination buffer unit 9 and the communication
process unit 10, and analyzed and divided into
various data by a search result data layout 31-2.
In accordance with these data and a layout
35   definition information 31-1 of a menu screen of the
search result, a search result menu is displayed on
the display unit 3 as shown in FIG. 8D in step S33.

The arithmetic operation unit 8 determines
whether or not a command that designates an item
constituting the search result menu has been
inputted through the input unit 2 in step S34.   If
5   it is determined that the command that designates an
item constituting the search result menu ("YES" in
step S34), the information on the designated item,
such as its name sand contents, is recorded as the
selected item in the memory unit 7 in step S35.
10   The arithmetic operation unit 8 then
transmits the URL address of the homepage of the
item designated in step S34 to the browser, so that
the contents of the homepage can be displayed on the
display unit 3, as shown in FIG. 8E, via the
15   communication buffer unit 9 and the communication
process unit 10 in step S36.   Next, the URL address
of the homepage displayed on the display unit 3 is
recorded in the memory unit 7 in step S37.
          With the homepage being displayed on the
20   display unit 3, it is determined whether or not a
bookmark registration command contained in the
browser has been inputted through the input unit 2
in step S38.   If it is determined that the bookmark
registration command has been inputted ("YES" in
25   step S38), it is determined whether or not the
recorded URL address is found in the memory unit 7
in step S39.
          If it is determined that the recorded URL
address is found in the memory unit 7 ("YES" in step
30   S39), the arithmetic operation unit 8 determines in
step S40 whether or not a "steady relationship" is
maintained between the URL address recorded in the
memory unit 7 in step S37 and the URL address of the
homepage displayed on the display unit 3 when the
35   bookmark registration command is inputted in step
S38.
          The "steady relationship" means a

situation in which the URL address of the homepage
displayed on the display unit 3 when the bookmark
registration command is inputted in step S38 is
identical to or lower than the URL address recorded
5   in the memory unit 7 in step S37.

     If it is determined that the "steady
relationship" is maintained between the two URL
addresses ("YES" in step S40), the storage location
of the information of the homepage displayed on the
10   display unit 3 at the time of the input of the
bookmark registration command into the definition
entry and the control table is determined in step
S41, in accordance with the control table 18 and the
selected items recorded in the memory unit 7 in
15   steps S25 and S30.

     Referring to FIGS. 8A to 8E, for instance,
the memory unit 7 stores the medium item "see
weather forecast shown in FIG. 8B and the small item
"Kanto" shown in FIG. 8C as the selected items
20   recorded in steps S25 and S30. The item "Weather
Forecast in the Kanto Region" shown in FIG. 8D is
searched for with the search character string
"weather forecast & Kanto|Kanto region" associated
with the medium item "see weather forecast" and the
25   small item "Kanto". Accordingly, the newly detected
item "Weather Forecast in the Kanto Region" can be
considered to be a category steadily associated with
the medium item "see weather forecast and the small
item "Kanto", and the storage location is determined
30   to be a level under the medium item "see weather
forecast" and the small item "Kanto".

     To register the newly detected item at the
location determined in step S41, the arithmetic
operation unit 8 sets the name of the homepage in
35   the page title 28, the contents of the homepage in
the introduction 30, and the URL address of the
homepage at the time of the input of the

registration command in the URL address 29. The
arithmetic operation unit 8 then generates a
definition entry for the registered item, and
performs an information adding storage process for
5   the definition entry and the control table in step
S42. Here, the processed definition entry and
control table are recorded in the auxiliary
recording unit 6 if necessary. The information
adding storage process is performed to store the
10   page title 28, the URL address 29, and the
introduction 30.

If no item is designated in steps S23 and
S34 and no bookmark registration command is inputted
in step S38, the operation may be suspended until an
15   item is designated, or if no item is designated over
a predetermined period of time, the operation can be
terminated. If the additional selection flag is not
defined as "ON" in step S26 and no item is
designated in step S28, the construction of a search
20   character string is continued in step S31. Also, if
no URL address is recorded in step S39 and no steady
relationship is maintained with any URL address in
step S40, the bookmark registration operation as a
conventional function of the browser is performed in
25   step S43, and the process of step S38 is continued.

FIG. 10 is a flowchart of one embodiment
of procedures performed by a computer that embodies
the selection process performed by the search
support device in accordance with the present
30   invention. The selection process performed by the
search support device is to select an item that is
registered in accordance with the flowchart shown in
FIG. 5 from a menu in which information is
classified into categories.

35   In FIG. 10, a command for activating the
browser for accessing a homepage is inputted through
the input unit 2 in step S50. The search support

device of the present invention may be automatically started by activating the browser, or a user may input a command for starting the search support device through the input unit 2.

5   As the browser and the search support device are activated, the arithmetic operation unit 8 reads out the control table from the auxiliary recording unit 6 or the memory unit 7, and displays a menu shown in FIG. 11A on the display unit 3 in
10   step S51. If no display unit is provided in the auxiliary recording unit 6 and the memory unit 7, the definition entry is read out from the auxiliary recording unit 6, and a control table is produced based on the definition entry.
15   The arithmetic operation unit 8 determines whether or not a command for designating an item constituting a menu shown in FIG. 11A has been inputted through the input unit 2 in step S52. If it is determined that the command for designating an
20   item constituting the menu has been inputted ("YES" in step S52), the designated item is recorded as a selection item in the memory unit 7 in step S53. Next, it is determined whether or not a sub menu is defined under the selection item in step S58. If a
25   sub menu is defined, the operation moves on to step S51 so as to display a sub menu shown in FIG. 11B.
               If no sub menu is defined, the arithmetic operation unit 8 determines, in step S54, whether or not a registered item is contained in the item
30   designated in step S52. If there is a registered item in the designated item, the arithmetic operation unit 8 displays a registration menu shown in FIG. 11C on the display unit 3. As shown in FIG. 11B, an item that has a registered item is marked
35   with a larger dot, while items that do not has a registered item are marked with smaller dots, so that whether a registered item exists on a level

under each item can be easily determined.

The arithmetic operation unit 8 then determines whether or not a command for designating a registered item has been inputted through the

5   input unit 2 in step S56. If the command for designating a registered item has been inputted ("YES" in step S56), the arithmetic operation unit 8 reads out the information (the URL address 29) as to the homepage of the selected registered item from

10   the control table, and supplies the information to the browser. The arithmetic operation unit 8 then displays the homepage of the supplied URL address on the display unit 3 by the browser in step S57.

In the previous process, if no item or

15   registered item is designated in step S52, the operation may be suspended until an item is designated. If no item is designated over a certain period of time, the operation may be stopped. If there is no registered item in step S54 and a

20   registered item is again searched for, the control operation moves on to step S26 of FIG. 5, and the search process is continued.

FIG. 12 is a flowchart of procedures performed by the computer that embody a delete

25   process performed by the search support device in accordance with the present invention. The delete process performed by the search support device is a process to delete an item that has been registered in accordance with the flowchart of FIG. 5 from the

30   menu in which information is classified into categories.

The flowchart shown in FIG. 12 is substantially the same as the flowchart shown in FIG. 10, except for one part. Accordingly, the same

35   procedures as in the flowchart of FIG. 10 are denoted by the same reference numerals, and explanations for those are omitted. In FIG. 12, a

registration menu is displayed on the display unit 3 through steps S50 to S55 and S58.

The arithmetic operation unit 8 determines whether or not a command for designating an item to be deleted has been inputted through the input unit 2 in step S60. If the command for designating an item to be deleted has been inputted ("YES" in step S60), the arithmetic operation unit 8 deletes the information of the homepage of the selection item from the control table and the definition entry in step S61. If necessary, the control table and the definition entry updated in step S61 are stored in the auxiliary recording unit 6. In the previous process, if no item to be deleted is designated in step S60, the operation may be suspended until an item is designated. If no item is designated over a certain period of time, the operation may be stopped.

FIG. 13 is a flowchart of a second embodiment of the procedures performed by the computer that embodies a registration process performed by the search support device in accordance with the present invention. The flowchart of the second embodiment shown in FIG. 13 is characterized in that a search result of the search engine is processed, and that the page of the search result of the search engine is displayed without displaying its own menu of search results. The flowchart of FIG. 13 is substantially the same as the flowchart of FIG. 5, except for one part. In FIG. 13, the same procedures as in the flowchart of FIG. 5 are denoted by the same reference numerals, and explanations for them are omitted.

In FIG. 13, the browser and the search support device are activated in step S20. As the browser and the search support device are activated, the arithmetic operation unit 8 communicates with the server via the communication buffer unit 9 and

the communication process unit 10, and writes a definition entry supplied from the server into the memory unit 7. Based on the definition entry, the arithmetic operation unit 8 produces a control table,

5 and stores the control table in the auxiliary recording unit 6, if necessary, in step S70.

The browser is continued being operated, and menus shown in FIGS. 14A and 14B are displayed in step S71. The menus shown in FIGS. 14A and 14B

10 are category menus especially for search on the server produced in the HTML format, but not a page that belongs to the search engine.

The arithmetic operation unit 8 records a selection record selected by a user handling the

15 category menu shown in FIG. 14A in the memory unit 7 in step S72. If there is a sub menu, the operation returns to step S71, and the menu shown in FIG. 14B is displayed. If there is no sub menu page and the additional selection flag is set to "ON", the

20 additional menu is displayed on the display unit 3 through steps S26 and S27. When a command for designating an item constituting the additional menu is inputted, the search character string of the item selected in step S28 is jointed to the transmission

25 command for the search engine recorded in the memory unit 7 in step S73.

The selection record on the additional menu is recorded in the memory unit 7 in step S74. Using the transmission command constructed in step

30 S73, the search process is carried out by the search engine in step S75. A search result by the search engine is displayed on the display unit 3, as shown in FIG. 14D in step S76.

The arithmetic operation unit 8 determines

35 whether or not a command for designating an item constituting the search result has been inputted through the input unit 2 in step S77. If the

command for designating an item constituting the menu of the search result has been inputted ("YES" in step S77), the homepage of the item designated in step S77 is displayed on the display unit 3, as
5   shown in FIG. 14E in step S36.

In steps S37 to S40, if it is determined that a certain relationship is maintained between the URL address recorded in the memory unit 7 in step S37 and the URL address of the homepage
10   displayed on the display unit 3 at the time of the input of the bookmark registration command in step S38, a location for storing the information of the homepage displayed on the display unit 3 at the time of the input of the bookmark registration command
15   into the control table is determined, in step S78, from the control table and the selection record recorded in the memory unit 7 in steps S72 and S74.

The arithmetic operation unit 8 then performs an information adding storage process for
20   the definition entry and the control table, in step S79, thereby registering a newly detected item in the location determined in step S78. At this point, the definition entry and the control table subjected to the information adding storage process are
25   recorded in the auxiliary recording unit 6, if necessary.

In the flowchart of the second embodiment shown in FIG. 13, the definition entry read and the control table production (step S70) may be performed
30   immediately before the additional storage location determination (step S78) and the information adding storage process (step S79).

In the following, the procedures for producing a definition entry and a control table
35   from a selection record will be described. FIG. 15 illustrates the production of a definition entry and a control table from a selection record. FIG. 16 is

a flowchart of the production of the definition
entry and the control table from the selection
record.

The selection record contains the level
number of an item selected by a user from the
category menu shown in FIG. 14B, and the selection
item. For instance, the example shown in FIG. 15A
contains a selection item "living" at the level
number 1, a selection item "news" at the level
number 2, a selection item "politics" at the level
number 3. In accordance with the selection record,
the definition entry and the control table are
produced, and the URL address of the homepage
detected from the search character string associated
with the three selection items is registered in a
group a level below the selection item "politics" of
the level number 3.

In an example shown in FIG. 15B, an
addition process is performed for the definition
entry and the control table that have been produced
in advance. With selection items "living", "weather
forecast", and "Kanto region" being recorded as a
selection record at the level numbers 1, 2, and 3,
respectively, no item is newly produced for the
level number 1, because the selection item "living"
has already been produced at the level number 1 in
the definition entry and the control table.

Since the selection item "weather
forecast" at the level number 2 is not identical to
the selection item "news" produced at the level
number 2 in the definition entry and the control
table, the selection item "weather forecast" is
newly produced at the level number 2, which is one
level below the selection item "living" at the level
number 1. Likewise, since the selection item "Kanto
region" at the level number 3 is not identical to
the selection item "politics" produced at the level

number 3 in the definition entry and the control
table, the selection item "Kanto region" is newly
produced at the level number 3, which is one level
below the selection item "weather forecast".

5   The procedures of producing the definition
entry and the control table as shown in FIG. 15 can
be embodied by the flowchart shown in FIG. 16.

           In FIG. 16, if any data is recorded in a
memo region to be used in the process of producing
10   the definition entry and the control table from the
selection record prepared in the memory unit 7, the
arithmetic operation unit 8 erases the data and
clears the memo region to a non-data recorded state
(hereinafter referred to as "cleared state") in step
15   S80.

           The arithmetic operation unit 8 determines
whether or not selection records are recorded in the
memory unit 7 in step S81. If selection records are
recorded in the memory unit 7 ("YES" in step S81),
20   the arithmetic operation unit 8 reads out one of the
selection records in step S82.

           The location of the level of the selection
record read out in step S82 is checked from the
level number, and it is determined whether or not
25   the definition entry and the control table has a
selection item at the location of the selection
record in step S83. If the definition entry and the
control table have a selection item at the location
of the selection record ("YES" in step S83), the
30   arithmetic operation unit 8 determines in step S85
whether or not the name of the selection item of the
selection record is identical to the name of the
selection item in the definition entry and the
control table. On the other hand, if the definition
35   entry and the control table have a selection item at
the location of the selection record ("NO" in step
S83), a new level is formed at the location of the

selection record in the definition entry and the control table in step S84.

If the name of the selection item of the selection record is identical to the name of the selection item in the definition entry and the control table ("YES" in step S85), the location of the selection item of the selection record is recorded in the memo region in step S87. On the other hand, if the name of the selection item of the selection record is not identical to the name of the selection item in the definition entry and the control table ("NO" in step S85), the selection item is produced in the definition entry and the control table, and recorded in the memory unit 7 in step S86.

After the selection item is produced in the definition entry and the control table, the arithmetic operation unit 8 also records the location of the produced selection item in the memo region in step S87. The read start position of the selection record is moved to the next position in step S88, the procedures of step S81 to S88 are repeated.

If it is determined in step S81 that no selection records to be read next are recorded, it is then determined whether or not the memo region is in the cleared state in step S89.

If it is determined that the memo region is not in the cleared state ("YES" in step S89), the URL address of a desired homepage is registered on a level below the location of the selection item recorded in the memo region in step S90. If it is determined that the memo region is in the cleared state ("YES" in step S89), the operation is ended.

Referring now to FIG. 17, an example of procedures for producing the definition entry and the control table from the selection record described with reference to FIGS. 15 and 16 will be

described. FIG. 17 is a flowchart of a third
embodiment of procedures performed by a computer
that embody a registration process performed by the
search support device in accordance with the present

5 invention. The flowchart of FIG. 17 is
substantially the same as the flowchart of FIG. 13,
except for one part. Accordingly, in the flowchart
of FIG. 17, the same procedures as in the flowchart
of FIG. 13 are denoted by the same reference

10 numerals, and explanations for them are omitted.
                In FIG. 17, the browser and the search
support device are activated in step S20. In steps
S71 and S72, a selection record selected in terms of
categories by a user handling the browser is

15 recorded in the memory unit 7. The user then
performs a search process by the search engine, and
displays a search result by the search engine on the
display unit in steps S75 and S76.
                The arithmetic operation unit 8 determines

20 whether or not a command for designating an item
constituting the search result has been inputted
through the input unit 2 in step S77. If the
command for designating an item constituting the
menu of the search result has been inputted ("YES"

25 in step S77), the homepage of the item designated in
step S77 is displayed on the display unit 3 as shown
in FIG. 14E in step S36.
                In steps S37 to S40, if a certain
relationship is maintained between the URL address

30 recorded in the memory unit 7 in step S37 and the
URL address of the homepage displayed on the display
unit 3 at the time of the input of the bookmark
registration command ("YES" in step S40), it is then
determined whether or not the definition entry and

35 the control table are recorded in the memory unit 7
in step S90.
                If it is determined that the definition

entry and the control table are not recorded in the memory unit 7 ("YES" in step S90), the arithmetic operation unit 8 produces the definition entry and the control table by the method described with reference to FIGS. 15 and 16 in step S91. If it is determined that the definition entry and the control table are recorded in the memory unit 7 ("NO" in step S90), the definition entry and the control table are not produced.

In accordance with the flowchart of FIG. 16, using the definition entry, the control table, and the selection record, the arithmetic operation unit 8 then determines, in step S92, the location for storing the information of the homepage displayed on the display unit 3 at the time of the input of the definition entry and the control table bookmark registration command.

The arithmetic operation unit 8 then performs an information adding storage process for the definition entry and the control table in step S93 so as to register the newly detected item at the location determined in step S92. Here, the definition entry and the control table subjected to the information adding storage process are recorded in the auxiliary recording unit 6, if necessary.

In the above embodiments, the auxiliary recording unit 6 shown in FIG. 4 is equivalent to the storage unit.

It should be understood that the present invention is not limited to the above embodiments, but various modifications and changes may be made without departing from the scope of the present invention.

[FIG. 1]
START
S10   activate a search engine
S11   input a search keyword
S12   perform a search process
S13   further limitation necessary?
S14   input again a search keyword
S15   bookmark registration necessary?
S16   carry out the bookmark registration
S17   access the homepage
END

[FIG. 2A]
search engine page
advertisement
search keyword
return
advance
home
re-read
stop
connect
bookmark
open
save

[FIG. 2B]
search engine page
advertisement
search keyword
weather forecast
national weather forecast
get timely information. National weather forecast
return
advance
home
re-read
stop
connect

bookmark

open

save

[FIG. 2C]

search engine page

advertisement

search keyword

Kanto region

weather forecast for Kanto region

get weather information by a simple process

return

advance

home

re-read

stop

connect

bookmark

open

save

[FIG. 2D]

Page of "Weather Forecast for Kanto Region"

return

advance

home

re-read

stop

connect

bookmark

open

save

[FIG. 3A]

bookmark

car mania

bicycle club

animated films 1998

manga kingdom

weather forecast for Kanto region

[FIG. 3B]
page of "Weather forecast for Kanto region"
return
advance
home
re-read
stop
connect
bookmark
open
save

[FIG. 4]

2	input unit
3	display unit
4	drive unit
5	recording medium
6	auxiliary recording unit
7	memory unit
8	arithmetic operation unit
9	communication buffer unit
10	communication process unit
回線	line

[FIG. 5]
START

S20	activate browser
S21	read a definition entry and produce a control table
S22	display the menu
S23	item designated?
S24	copy a search character string
S25	record the selected item
S26	additional selection flag ON?
S27	display the additional menu
S28	item designated?
S29	copy a search character string

S30   record the selected item

S31   construct a search character string

S32   perform a search process

S33   display the menu of search results

S34   item designated?

S35   record the selected item

S36   display the homepage of the selected item

S37   record the URL address

S38   registration key ON?

S39   URL address recorded?

S40   two URL addresses related?

S41   determine a location for additional
storage

S42   perform an information adding storage
process

S43   perform a conventional registration
process

S44   sub menu definition entry exist?

END

[FIG. 6]

definition entry

top/menu definition entry

     screen layout definition information

     number of categories

     number of registered members

     category code

     category name (title)

     category code

20   menu display item (title)

21   presence or absence of sub menu/menu number of
sub menu

22   presence or absence of a registered item/menu
number of the item

23   additional selection flag/additional menu code

24   search character string and search condition
(and/or) *1 or more*

sub menu definition entry group

menu number

screen layout definition information

number of registered members

25   menu display item (title)

additional selection flag/additional menu code

presence or absence of sub menu/menu number of sub menu

presence or absence of a registered item/menu number of the registered item

search character string and search condition (and/or) *1 or more*

additional menu definition entry

screen layout definition information

the number of menus

additional menu code

menu name (title)

additional menu code

the number of registered members

26   menu display item (title)

27   search character string (and/or)   *1 or more*

search process definition entry

31-1 layout definition information of the menu screen of search results

31-2 search result data layout definition

search engine start format definition

definition entry of registered items

registered item menu number

the number of registered members

28   page title

29   URL address

30   introduction of the page

[FIG. 7]

First-level menu

    Living   entertainment   travel/sightseeing

    Shopping   health   education/childcare

Budget   housing   problem solving

Second-level menu
    Living
        newspaper articles
        weather forecasts
        timetables
        Look up telephone numbers
        Look up postcodes
        Send a telegram
        Learn social manners
        Learn social welfare
        Keep a pet
        Ship goods
        TV program time schedule
        radio program time schedule
        traffic information
        call a taxi
        dishes to be delivered
        weddings and funerals
        bookstores/second-hand book stores
        voluntary tasks
        beauty tips
        be environment-friendly

    entertainment
        fortune-telling
        hobbies
        gambling
        gourmet
        family outing
        alcohol
        art
        lessons
        have a night out
        watch games/see concerts
        cigarettes

    travel/sightseeing

tour information/travel agents
transportation conditions
rent-a-car
hotels and accommodations
travel goods
untrodden spots

housekeeping
recipes
tableware
cloth cleaning
washing powder/liquid
toilet goods
kitchen goods
household appliances
cleaning goods
deodorants/insecticides
sewing kits

shopping
department stores
commodities
specialty stores
mail order shopping

health
hospitals/clinics
health care
Western medicine
Oriental medicine

Education/childcare
Nursing
Private schools/exams
Driving schools
Licenses
School information
Further education
Academic/reference books

[FIG. 8A]

first-level menu

     living   entertainment

     shopping   health

     budget   housing

return

advance

home

re-read

stop

connect

bookmark

open

save

[FIG. 8B]

living

     newspaper articles

     weather forecasts

     bus timetable

     JR timetable

     Look up telephone numbers

     Look up postcodes

     Send a telegram

     TV program time schedule

     radio program time schedule

     traffic information

     call a taxi

     dishes to be delivered

     weddings and funerals

     books

return

advance

home

re-read

stop

connect

bookmark

open
save

[FIG. 8C]
Kanto region
Kinki region
Chubu region
Shikoku region

[FIG. 8D]
Weather forecasts
    Title
    Weather forecast for Kanto region
    Weekly weather forecast for Kanto region
    Contents
    Obtain weather information by a very simple
process
    Get timely weather forecast information issued
by the Meteorological Agency

return
advance
home
re-read
stop
connect
bookmark
open
save

[FIG. 8E]
Page of "Weather Forecast for Kanto Region"
return
advance
home
re-read
stop
connect
bookmark

open
save

[FIG. 9]

検索文字列	search character string
タイトル	title
文字列	character string
制御表	control table
天気予報を知る	weather forecasts
32	weather forecast (and)
関東	Kanto
33	Kanto/Kanto region

検索文字列バッファ
      search character string buffer

34   weather forecast & Kanto/Kanto region

検索文字列の構築
      construction of a search character string

検索エンジン投入コマンド形式定義
      search engine start command format definition

実際の送信コマンドの構築
      construction of an actual transmission command

DATA に検索文字列を代入
      Substitute the search character string in data

36   http://search.or.jp/Title?=weather forecast & Kanto/Kanto region

[FIG. 10]

START

S50	activate the browser
S51	display a menu
S52	item designated?
S53	record the selected item
S54	item registered?
S55	display a registration menu
S56	item designated for registration?
S57	display the homepage of the selected registration item
S58	sub menu definition entry exist?
S59	another search process necessary?

END

FIG. 5 の S26 へ   to S26 of FIG. 5

[FIG. 11A]
first-level menu

living	entertainment
shopping	health
budget	housing

return
advance
home
re-read
stop
connect
bookmark
open
save

[FIG. 11B]
living

    newspaper articles
    weather forecasts
    bus timetable
    JR timetable
    Look up telephone numbers
    Look up postcodes
    Send a telegram
    TV program time schedule
    radio program time schedule
    traffic information
    call a taxi
    dishes to be delivered
    weddings and funerals
    books
return
advance
home
re-read
stop

connect
bookmark
open
save

[FIG. 11C]
weather forecast for Kanto region
another search process

[FIG. 11D]
Page of "Weather Forecast for Kanto Region"
return
advance
home
re-read
stop
connect
bookmark
open
save

[FIG. 12]
START
S50   activate the browser
S51   display a menu
S52   item designated?
S53   record the selected item
S54   item registered?
S55   display a registration menu
S58   sub menu definition entry exist?
S60   item designated for deletion?
S61   delete the selected delete item from the
control table and the definition entry
END

[FIG. 13]
START
S20   activate the browser
S70   read a definition entry and produce a

control table

S71	display the menu by the browser
S72	save a selection record
S62	sub menu page exist?
S26	additional selection flag ON?
S27	display the additional menu
S28	item designated?
S73	construct a search character string
S74	save the selection record
S75	perform a search process
S76	display a menu of search results
S77	item designated?
S36	display the homepage of the selected item
S37	record the URL address
S38	registration key ON?
S39	URL address recorded?
S40	two URL addresses related?
S78	determine a location for additional storage
S79	perform an information adding storage process
S43	perform a conventional registration process
END	

[FIG. 14A]

first-level menu

living   entertainment
shopping   health
budget   housing

return
advance
home
re-read
stop
connect
bookmark
open
save

[FIG. 14B]

living

     newspaper articles

     weather forecasts

     bus timetable

     JR timetable

     Look up telephone numbers

     Look up postcodes

     Send a telegram

     TV program time schedule

     radio program time schedule

     traffic information

     call a taxi

     dishes to be delivered

     weddings and funerals

     books

return

advance

home

re-read

stop

connect

bookmark

open

save

[FIG. 14C]

Kanto region

Kinki region

Chubu region

Shikoku region

[FIG. 14D]

search engine page

advertisement

search keyword   Kanto region

weather forecast for Kanto region

weather information can be obtained through a very
simple operation

return
advance
home
re-read
stop
connect
bookmark
open
save

[FIG. 14E]
Page of "Weather Forecast for Kanto Region"
return
advance
home
re-read
stop
connect
bookmark
open
save

[FIG. 15A]
1) living
2) newspaper articles
3) politics
定義体／制御表　　　　　　definition entry/control table
起点　　　　　　start point
URL アドレスを. . .
　　　Register the URL address in a group below the
"politics"
URL アドレス　　　URL address

[FIG. 15B]
1) living
2) weather forecast

3) Kanto region
定義体／制御表　　　　definition entry/control table
起点　　　　　　　　start point
一致したものの．．　　produced under a corresponding
　　　　　　　　　　item
URL アドレスを．．．　register the URL address in a
　　　　　　　　　　group under the "Kanto region"

2) newspaper articles
3) politics
URL アドレス　　　　URL address

[FG. 16]
START
S80　　　clear a memo region
S81　　　"selection record" exist?
S82　　　read one selection record
S83　　　the same level number exist on the same
level in the definition entry and the control table
S84　　　produce a level without a selected item
S85　　　a selected item of the same name as the
selection record exist on the same level?
S86　　　produce the selected item in the
definition entry and the control table
S87　　　record the location of the selected item
S88　　　move the read start position to the next
in the selection record
S89　　　memo region cleared?
S90　　　register homepage information (such as the
URL address) under the location of the recorded
selected item
END

[FIG. 17]
START
S20　　　activate the browser
S71　　　display the menu by the browser
S72　　　save a selection record
S75　　　perform a search process
S76　　　display the menu of search results

S77	item designated?
S36	display the homepage of the selected item
S37	record the URL address
S38	registration key ON?
S39	URL address recorded?
S40	two URL addresses related?
S90	no definition entry and control table exist?
S91	produce a definition entry and a control table
S92	determine the location for additional storage
S93	perform an information adding storage process
S43	perform a conventional registration process
END	